

REMARKS

Favorable reconsideration of this application, in light of the preceding amendments and following remarks, is respectfully requested. Claims 12 and 13 have been canceled without prejudice or disclaimer. Claim 14 has been added. Claims 1-7, 11 and 14 are pending, with claims 1, 11 and 14 being independent.

RESTRICTION

The Examiner has withdrawn claims 12 and 13 as directed to an invention independent or distinct from the invention originally claimed, for example, in claims 1 and/or 11. Applicants do not disagree that claims 12 and 13 are directed to independent and distinct inventions. However, Applicants do not agree that this restriction is proper because the Examiner would not be unduly burdened if forced to examine all of claims 1-7, 11, 12 and 13 – a requirement for a proper restriction. Regardless, Applicants have canceled claims 12 and 13 without prejudice or disclaimer. Applicants reserve the right to file a divisional application on one or more of claims 12 and/or 13.

CLAIM OBJECTIONS

Applicants have corrected the minor typographical error in claim 1.

PRIOR ART REJECTIONS

Claims 1, 3-5, 7 and 11 stand rejected under 35 U.S.C. §103(a) as unpatentable over U.S. Patent No. 6,021,009 ("Borodovsky") in view of U.S. Patent No. 5,655,110 ("Krivokapic"). This rejection is respectfully traversed.

Claim 1 is directed to a method of compensating for process-induced CD variations in a pattern generator printing patterns on masks. A two-dimensional critical dimension (CD) distribution associated with a pattern printed on a first mask is determined, and a two-dimensional CD compensation file is generated. The two-dimensional CD distribution is equalized by modulating an exposing dose in response to the two-dimensional CD compensation file, and a second mask is patterned using the modulated exposing dose.

Contrary to the method of claim 1, Borodovsky does not disclose printing any patterns on *masks*. Borodovsky *utilizes masks to print chips* that have non-uniform properties. More particularly, Borodovsky discloses a method for modifying optics (using an optical compensator 40) to make empirical corrections when *using masks* known to have errors. To do so, Borodovsky uses an attenuating filter 45 to compensate for the anticipated error. In one embodiment, the filter 45 is arranged between the light source and the mask. See FIG. 7. In another embodiment, the filter 45 is implemented as part of the mask. See FIG. 8.

Accordingly, Borodovsky does not disclose or suggest any method of "compensating for process-induced CD variations in a pattern generator printing *patterns on masks*," as is the case in claim 1.

Moreover with respect to claim 1, Borodovsky does not disclose or fairly suggest at least, "equalizing the two-dimensional CD distribution by *modulating an exposing dose* in response to the two-dimensional CD compensation file." To the contrary, as noted above, Borodovsky compensates for anticipated errors using an optical compensator 40 in the form of a filter 45. While Borodovsky does mention controlling exposure time to control a total dose level, Borodovsky does not mention or fairly suggest "*modulating an exposing dose*," in response to a two-dimensional CD compensation file to equalize a two-dimensional CD distribution.

Moving forward, the Examiner correctly recognizes that Borodovsky fails to teach or suggest at least, "patterning a second mask using the modulated exposing dose," as required by claim 1, but relies upon Krivokapic to teach this feature. However, even assuming *arguendo* that Krivokapic could be combined with Borodovsky (which Applicants do not admit, and respectfully disagree with), Krivokapic suffers from the same deficiencies as Borodovsky with respect to claim 1 in addition to failing to disclose or fairly suggest at least, "patterning a second mask using the modulated exposing dose," as alleged by the Examiner.

Referring to FIG. 1 of Krivokapic, a wafer 110 is supported on a chuck 105. A radiation source 170 supplies exposure radiation 175, 176 to the wafer 110 through a *pre-patterned mask* 160 and optics section 150 for a given amount of time to create a pattern within the underlying photoresist layer 118. Krivokapic does not disclose printing any patterns on *masks*, but instead merely discloses *utilizing masks to print patterns*. Krivokapic explicitly discloses that the masks 160 are supplied by a prescribed mask supplier 166, and that characteristics of the masks 160 are adjusted by ordering a new mask from the mask supplier 166. Accordingly, Krivokapic does not disclose or suggest any method of "compensating for process-induced CD variations in a pattern generator printing *patterns on masks*," including, *inter alia*, "*patterning a second mask* using the modulated exposing dose," as required by claim 1.

Moreover, as is the case with Borodovsky, Krivokapic also fails to disclose or suggest at least, "equalizing the two-dimensional CD distribution by *modulating an exposing dose* in response to the two-dimensional CD compensation file," as required by claim 1.

For at least the foregoing reasons, claim 1 is patentable over Borodovsky in view of Krivokapic, taken singly or in combination (assuming *arguendo* the references could be

combined, which again Applicants do not admit).¹ Claim 11 is patentable over Borodovsky in view of Krivokapic for reasons at least somewhat similar to those set forth above with regard to claim 1. Claims 3-5 and 7 are patentable at least by virtue of their dependency from claim 1.

FURTHER PRIOR ART REJECTIONS

Claims 2 and 6 stand rejected under 35 U.S.C. § 103(a) as allegedly unpatentable over Borodovsky in view of Krivokapic and further in view of U.S. Patent No. 6,424,879 ("Chilese"). Applicants respectfully traverse this rejection in that even assuming *arguendo* that Borodovsky and/or Krivokapic could be combined with Chilese (which Applicants do not admit), Chilese suffers from the same above-discussed deficiencies as Borodovsky and Krivokapic with regard to claim 1. Therefore, the combination still fails to render claim 1, and in turn claims 2 and 6, *prima facie* obvious. Withdrawal of this rejection is requested.

CONCLUSION

Accordingly, in view of the above amendments and remarks, reconsideration of the objections and rejections and allowance of each of claims 1-7 and 11-13 in connection with the present application is earnestly solicited.

Pursuant to 37 C.F.R. §§ 1.17 and 1.136(a), Applicant(s) hereby petition(s) for a two (2) month extension of time for filing a reply to the outstanding Office Action and submit the required \$460.00 extension fee herewith.

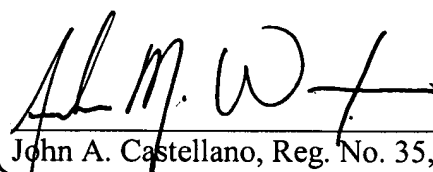
¹ To be thorough and further expedite prosecution, Applicants discuss each of Borodovsky and Krivokapic in turn with respect to claim 1. For the sake of clarity, Applicants provide discussions of each of the references separately, however, Applicants are not attacking these references individually, but arguing that the references, even taken in combination, fail to render the claimed invention obvious because all features of claim 1 are not found in the prior art.

Should there be any outstanding matters that need to be resolved in the present application; the Examiner is respectfully requested to contact John A. Castellano at the telephone number of the undersigned below.

If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies, to charge payment or credit any overpayment to Deposit Account No. 08-0750 for any additional fees required under 37 C.F.R. § 1.16 or under 37 C.F.R. § 1.17; particularly, extension of time fees.

Respectfully submitted,

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